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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,163	02/20/2002	Susanna Chubinskaya	STK-081	8382

22832 7590 10/18/2005

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EXAMINER

COUNTS, GARY W

ART UNIT

PAPER NUMBER

1641

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/081,163

Applicant(s)

CHUBINSKAYA ET AL.

Examiner

Gary W. Counts

Art Unit

1641

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 December 1899.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 and 22-47 is/are pending in the application.
- 4a) Of the above claim(s) 1-8, 10-16, 22, 24-32, 35-43 and 45-47 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9, 17-20, 23, 33, 34 and 44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### **Status of the claims**

The Request for Continued Examination and amendment filed September 20, 2005 is acknowledged and has been entered.

### **Rejections Withdrawn**

Applicants' amendment to the claims has overcome the enablement rejection. Thus, the 112 1<sup>st</sup> rejection of enablement is withdrawn.

### ***Claim Objections***

1. Claim 44 is objected to because of the following informalities: Claim 44 is considered to be a duplicate claim of claim 9 because osteoarthritis is already recited in claim 9. It is recommended to cancel claim 44. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 9, 17, 18-20, 23, 33, 34 and 44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 is vague and indefinite because the preamble of the claim does not correlate with the body of the claim. The preamble of the claim recites "indicative of a disease selected from the group consisting of osteoarthritis and osteoporosis in a patient". However, the body of the claim does not positively recite that the age-related

tissue disorder is indicative of a disease selected from the group consisting of osteoarthritis and osteoporosis.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 9, 17, 18, 20, 23, 33, 34 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Findlay et al (WO 00/13024) in view of Chubinskaya et al (Osteogenic protein-1 could be detected in human articular cartilage. Trans Ortho Res Soc 1998; 23: 33) or Chubinskaya et al (Osteogenic Protein-1 is a chondroprotective factor endogenously expressed by human articular chondrocytes, 3<sup>rd</sup> Symposium – Cartilage and Cartilage Repair in the New Millennium, Gothenburg, Sweden, April 27-29, 2000) or Chubinskaya et al (“Endogenous Osteogenic Protein-1 in Articular Cartilage”, Book Chapter in the MBP Book (S. Lindholm, ed. 2000)).

Findlay et al (WO 00/13024) disclose methods for predicting or diagnosing age-related disorders such as osteoarthritis and osteoporosis. Findlay et al disclose determining the level of a marker such as BMP7 (another name for OP-1, as disclosed by Chubinskaya et al “Endogenous Osteogenic Protein-1 in Articular Cartilage”, Book Chapter in the MBP Book) in a tissue or body fluid and comparing the level to a standard. Findlay et al discloses that the standard can be a range or experimental control.

Findlay et al differ from the instant invention in failing to specifically state the sample is a joint tissue sample and that a decrease in OP-1 compared to the standard amount is indicative of the presence of the age-related tissue disorder.

Chubinskaya et al (Trans Ortho Res Soc 1998, 23: 33) discloses that OP-1 protein is reduced in osteoarthritis articular (joint) cartilage samples as compared to normal adult samples.

Chubinskaya et al (3<sup>rd</sup> symposium) discloses that OP-1 protein is down regulated (decreased) in osteoarthritis articular (joint) cartilage samples as compared to normal adult samples.

Chubinskaya et al (Book Chapter 11 in the MBP Book) discloses that OP-1 protein is decreased in osteoarthritis articular (joint) cartilage samples as compared to normal adult samples.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate joint tissue sample as taught by Chubinskaya et al (Trans Ortho Res) into the method of Findlay et al because Findlay et al specifically teaches that any tissue in which the markers are found can be used and Chubinskaya et al shows that it is found in joint tissue. Therefore, one of ordinary skill in the art would have a reasonable expectation of success incorporating a joint tissue sample as taught by Chubinskaya et al into the method of Findlay et al. It would have also been obvious to one of ordinary skill in the art at the time the invention was made to determine a decrease of BMP7 (OP-1) as compared to a control to predict or diagnose age-related tissue disorder because Chubinskaya et al teaches that a decrease of OP-1 protein occurs in OA patients compared to that of normal patients.

It would have also been obvious to one of ordinary skill in the art at the time the invention was made to incorporate joint tissue sample as taught by Chubinskaya et al (3<sup>rd</sup> Symposium) into the method of Findlay et al because Findlay et al specifically teaches that any tissue in which the markers are found can be used and Chubinskaya et al (3<sup>rd</sup> Symposium) shows that it is found in joint tissue. Therefore, one of ordinary

Art Unit: 1641

skill in the art would have a reasonable expectation of success incorporating a joint tissue sample as taught by Chubinskaya et al into the method of Findlay et al. It would have also been obvious to one of ordinary skill in the art at the time the invention was made to determine a decrease of BMP7 (OP-1) as compared to a control to predict or diagnose age-related tissue disorder because Chubinskaya et al teaches that a decrease of OP-1 protein occurs in OA patients compared to that of normal patients.

It would have also been obvious to one of ordinary skill in the art at the time the invention was made to incorporate joint tissue sample as taught by Chubinskaya et al (Book Chapter 11 in the MBP Book) into the method of Findlay et al because Findlay et al specifically teaches that any tissue in which the markers are found can be used and Chubinskaya et al (Book Chapter 11 in the MBP Book) shows that it is found in joint tissue. Therefore, one of ordinary skill in the art would have a reasonable expectation of success incorporating a joint tissue sample as taught by Chubinskaya et al into the method of Findlay et al. It would have also been obvious to one of ordinary skill in the art at the time the invention was made to determine a decrease of BMP7 (OP-1) as compared to a control to predict or diagnose age-related tissue disorder because Chubinskaya et al teaches that a decrease of OP-1 protein occurs in OA patients compared to that of normal patients.

With respect to the recitation "the predetermined standard is age-correlated" and "age adjusted" as recited in instant claims. One of ordinary skill in the art would recognize that the since Findlay et al teaches that the markers are age-related (page 3) and that the level of the marker is compared to a standard to determine whether the

Art Unit: 1641

level of the marker falls within a range indicative of the age-related disorder (page 3).

One of ordinary skill would recognize that the standard would also be age-related and selected from the appropriate study populations. Further, Findlay teaches that the standard can be age matched normal control subjects (p. 16). Therefore, Findlay et al reads on the instantly recited claims.

With respect to the recitation "the joint tissue sample comprises synovial fluid" as recited in claim 18. Since, Findlay et al teaches that OP-1 can be detected in any body fluid, absent evidence to the contrary, one of ordinary skill in the art would have a reasonable expectation of success incorporating synovial fluid as the joint tissue sample in the method of Findlay et al.

8. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Findlay et al and Chubinskaya et al (Osteogenic protein-1 could be detected in human articular cartilage. Trans Ortho Res Soc 1998; 23: 33) or Chubinskaya et al (Osteogenic Protein-1 is a chondroprotective factor endogenously expressed by human articular chondrocytes, 3<sup>rd</sup> Symposium – Cartilage and Cartilage Repair in the New Millennium, Gothenburg, Sweden, April 27-29, 2000) or Chubinskaya et al ("Endogenous Osteogenic Protein-1 in Articular Cartilage", Book Chapter in the MBP Book (S. Lindholm, ed. 2000)) in view of Smart et al. (US 5,707,810).

See above for the teachings of Findlay et al and Chubinskaya et al.

Findlay et al and Chubinskay et al differ from the instant invention in failing to teach determining the amount of OP-1 protein present in the joint tissue sample by ELISA.



Smart et al disclose measuring OP-1 protein in tissue samples. Smart et al disclose that if an immunoassay is used to indicate the presence and/or concentration of a morphogen, an antibody specific for the protein will be used. Smart et al disclose that the level can be determined by Enzyme-linked immunosorbent assay (ELISA).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate an ELISA assay as taught by Smart et al into the modified method of Findlay et al because Findlay et al specifically teaches that the target molecule can be measured by using antibodies to the markers (p. 5) and Smart et al shows that OP-1 protein can be measured using antibodies in an assay such as an ELISA. Therefore, one of ordinary skill in the art would have a reasonable expectation of success incorporating an ELISA assay such as taught by Smart et al into the modified method of Findlay et al.

### ***Conclusion***

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary W. Counts whose telephone number is (571) 2720817. The examiner can normally be reached on M-F 8:00 - 4:30.

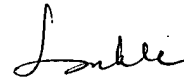
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (571) 272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1641

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Gary Counts  
Examiner  
Art Unit 1641  
October 12, 2005



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10/14/05